

WHAT IS CLAIMED IS:

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1. A method comprising:
etching a low dielectric constant material in an aqueous solution of hydrofluoric acid and hydrochloric acid.
 2. A method as set forth in claim 1 wherein the weight ratio of hydrofluoric acid to hydrochloric acid in the solution ranges from 1:3 to 4:1.
 3. A method as set forth in claim 1 wherein the low dielectric constant material includes -OR groups wherein R is a hydrocarbon derivative.
 4. A method as set forth in claim 1 wherein the low dielectric constant material includes methyloxy groups.
 5. A method as set forth in claim 2 wherein the aqueous solution includes deionized water and a weight ratio to each of the hydrofluoric acid and hydrochloric acid ranging from 1:1 to 5:1.

67,200-473
2000-0686

6. A method as set forth in claim 1 wherein the low dielectric constant material includes $\text{Si}(\text{CH}_3)_x\text{O}_{2-x}$.

7. A method as set forth in claim 1 wherein the low dielectric material is hydrophobic.

8. A method comprising:

providing a semiconductor device having at least two metal interconnect layers and a low dielectric constant material between the metal interconnect layers;
etching the device in aqueous solution of HF and HCl;
analyzing the etch device in a scanning electron microscope.

9. A method as set forth in claim 8 wherein the weight ratio of HF to HCl in the solution ranges from 1:3 to 4:1.

10. A method as set forth in claim 8 wherein the low dielectric constant material includes -OR groups wherein R is a hydrocarbon derivative.

11. A method as set forth in claim 8 wherein the low dielectric constant includes methyloxy groups.

67,200-473
2000-0686

12. A method as set forth in claim 8 wherein the metal interconnect consists essentially of copper.

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13. A method as set forth in claim 8 wherein the metal interconnect comprises aluminum.

14. A method as set forth in claim 8 wherein the step of etching the device is carried out by dipping the device in a bath of the aqueous solution of HF and HCl.

15. A method as set forth in claim 8 wherein the low dielectric constant material has a dielectric constant less than 3.8.

16. A method as set forth in claim 8 wherein the low dielectric constant material comprises fluorosilicate glass.

17. A method as set forth in claim 9 wherein the aqueous solution includes deionized water and wherein the weight ratio of the deionized water to either HF or HCl ranges from about 20:1 to 6:5.

18. A method as set forth in claim 8 wherein the low dielectric constant material is hydrophobic.

19. A method as set forth in claim 8 wherein the low dielectric constant material comprises an organosilicon.

20. A method as set forth in claim 8 wherein the low dielectric constant material comprises an organic based film.

21. A method comprising:
providing a semiconductor device having at least two metal interconnect layers and a low dielectric constant material between the two metal interconnect layers;
etching the semiconductor device in an aqueous solution of HF and HCl.

22. A method as set forth in claim 21 wherein the low dielectric constant material is formed from an organosilicon.

23. A method as set forth in claim 21 wherein the weight ratio of HF to HCl ranges from 1:3 to 4:1.

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2000-0686

Sub 12 24. A method as set forth in claim 23 wherein the aqueous solution comprises deionized water and wherein the weight ratio of deionized water to either the HF or HCl ranges from 20:1 to 6.5.

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